

ACIDIC DAIRY PRODUCTS-EVALUTION SENSORY

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Abstract

This paper presents a model approach of the author for evaluating the quality level of the acid dairy products. In the situation where most dairy products are now seen only through the view of the chemist analyst, the paper presents in figures the competent consumer opinion by means of standards of the sensory analysis. Following an evaluation sensory testing, panelists selected products with the best features, highlighting by scores the correspondence between the theoretical and factual issues related especially to the aroma of a dairy product.

Key words:

Dairies industry is one of the food industries, which, despite the entry on the market of great international competitors, remained relatively divided and the local and traditional aspects are predominant quite often. Small dairy producers can boast with traditional products or with certain products, which are more or less rightly called, "green". But unfortunately, these producers cannot be proud of a constant quality of their products and more often not even of a higher quality of the industrialized product.

The lack of trained personnel, the desire of some investors to get rich very quickly in this industry or just simply their ignorance are some of the basic reasons for the lack of quality of the dairy products that local companies put on the market.

As part of a more complex study, this paper tries to highlight the importance of the flavor of the dairy products.

Consumers often buy products which are called "tasteless" but in fact, usually, they never ask themselves what it really means "tasteless" and "taste."

We focused our attention on two traditional

products, manufactured by the majority of dairy processors: classic yogurt and buttermilk: a thermophilic product and a mesophilic one.

The purpose of the paper is to briefly present a variant of sensory analysis for products with the best outcomes out of the products analyzed, and also to interpret in a few words all the results.

MATERIAL AND METHOD

Evaluation sensory testing fits in the category of hedonic analytical tests of direct difference by classification. For all the tested products, the sensory features were: liking level, acidity, texture, surface brightness and smell.

The principle of testing consisted of presentation of samples of one product simultaneously to all participating panelists. Twenty-five panelists participated to this testing. For each analysed organoleptic sensory characteristic was drawn a score scale also called "response scale" (described in *table 1*).

It is worth mentioning that all the panelists participating in the survey are specialists or are presently working in food industry, nine of them even activating milk processing industry.

Table 1

Rating Scale Used in Sensory Evaluation

Score	Rating	Product features that constitute the basis of assessment of the organoleptic characteristics
5	Very good	Specific product characteristics (texture, flavor, surface brightness, acidity) strong, well defined, no defects
4	Good	Specific product characteristics: positive, pretty well defined, a few small defects
3	Satisfactory	Specific product characteristics: positive, neither well defined but pretty well defined, small defects
2	Unsatisfactory	Characteristics: lacks or defects that determine consumers to reject the product
1	Inadequate	Characteristics: lacks or different evident defects that determine consumers to reject the product

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The present study has considered the following standards (note that the classification within these standards was respected provided that the available space that did not require additional investment): SR ISO 4121:2008 - Sensory Analysis Methodology - Evaluation of food products through the use of scale method or methods by category, SR EN ISO 5492:2009 - Sensory Analysis Vocabulary, ISO 6658:2007 - Sensory Analysis Methodology - General Guide, ISO 11035:2007 - Sensory Analysis. Identification and selection of descriptors for establishing a sensory profile by a multidimensional approach, SR ISO 8589:2008 - Sensory Analysis. General directions for designing the test rooms, SR ISO 8587:2008 Sensory Analysis. Methodology. Classification

The two types of acid milk products were coded, and their service and scoring were done

randomly, disregarding the fact that certain products belong to mesophilic or thermophilic category, and this was due to the fact it was also taken into account a competent consumers assessment of their preferences for one or the other category.

RESULTS AND DISCUSSIONS

According to the results, we considered representative for the classic yogurt category the encoded product BR10. With a total score of 461 points, it outdid the next product by five points, while standing at a difference of 108 points of the lowest ranked product in the classic yogurt category.

Table 2

Scoring of BR10 product obtained following a sensory analysis

Panelist	Liking Level	Acidity	Consistence	Surface Brightness	Smell	Total Score
1	5	5	4	3	5	10
2	4	4	4	4	4	20
3	3	4	2	3	4	16
4	4	4	3	3	5	19
5	5	5	4	3	5	22
6	4	4	3	3	5	19
7	4	4	3	3	4	18
8	4	4	3	3	4	18
9	3	4	3	2	4	16
10	5	5	3	3	5	21
11	4	5	4	2	5	20
12	4	4	3	2	5	18
13	5	4	3	3	5	20
14	4	5	3	3	5	20
15	3	4	3	3	4	17
16	3	4	3	2	5	17
17	4	4	3	3	4	18
18	3	4	4	3	5	19
19	4	4	4	2	4	18
20	5	5	3	3	5	21
21	5	5	3	2	5	20
22	4	5	3	2	4	18
23	4	4	3	3	4	18
24	4	4	4	3	4	19
25	4	4	3	3	5	19
TOTAL	101	108	81	69	114	461

Product BR10 has met a maximum score of 22 points, given by one of the panelists, this being also the maximum score met within the sensory analysis of the studied products. There is a relatively homogeneous distribution of the score per characteristics, the most pronounced feature being acidity. Overall the product scored 461 of 625 points possible, thus a percentage of 69%. *Figure 1* is a graphical representation of the results.

The least appreciated feature of product BR10 was surface brightness. Mediocre scores were met, as well, for smell, consistency and

degree of pleasure. However, it cannot be said that any of these features is disappointing, because all of them met over 50% of maximum score possible per feature. The general sensory findings of product BR10 are shown in *figure 2*.

In the case of mesophilic products (buttermilk), the product encoded BA 05 can be considered representative for its category. With a score of 457 points it was 64 points over the mesophilic product ranked second. Moreover, the difference between the products ranking first and last in this category was of 121 points.

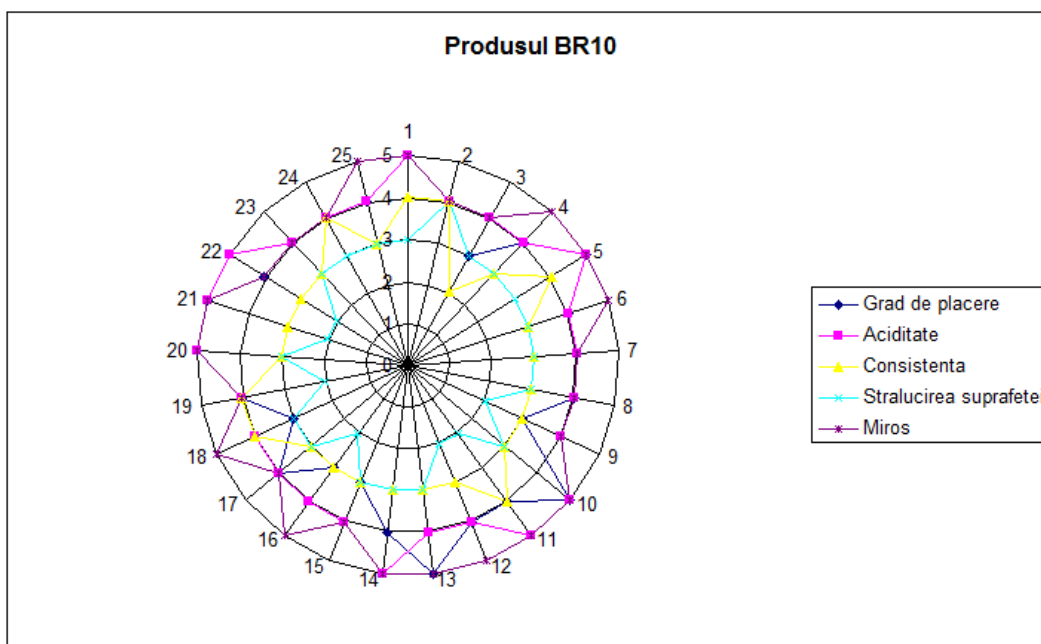


Figure 1 Graphic representation of the score obtained by product BR 10 in sensory analysis

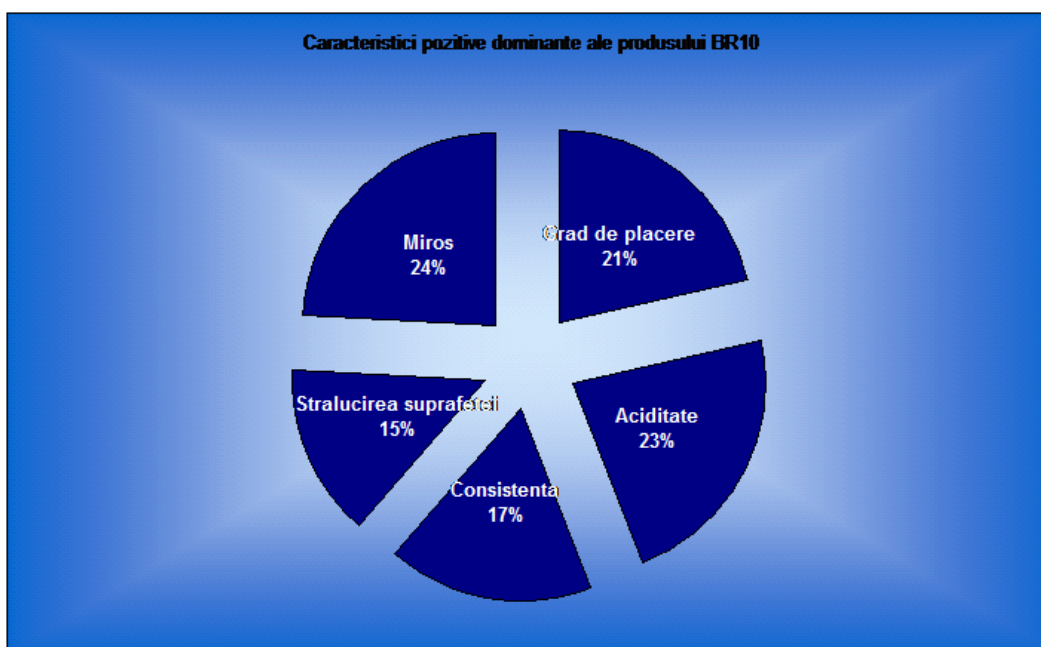


Figure 2 General sensory findings of product BR10

Product BA05 has met a maximum score of 23 points, given by two of the panelists. The most appreciated feature was the smell, but good scores were also met for the degree of pleasure and acidity. Overall, the product has met 73.1% of the maximum score. In addition it had the best score obtained by a product in these sensory analysis. *Figure 3* shows the graphical representation of the scores obtained by product CB04 from each panelist.

The least appreciated feature of the product BA05 was surface brightness. We can say, however, that for the product category to which it

belongs (buttermilk) surface brightness is not a very well-defined feature. The general sensory findings of product BA05 are represented in *figure 4*.

At a closer look we notice that the defining characteristic in the case of the thermophilic product is acidity, which is a feature determined actually by the concentration of lactic acid in the product. In the case of mesophilic products, the defining characteristic resulting from the analysis of graphs and tables is the smell, which is determined by specific compounds resulting from the mesophilic fermentation.

Theory is similar to practice in this case. Yogurt is an acid product, but unflavoured, lacking characteristic smell, while buttermilk does not

stand out due to its acidity but due to its characteristic smell (and taste, which is unanalyzed here).

Table 3

Scoring of product BA05 obtained in sensory analysis

Panelist	Liking Level	Acidity	Consistence	Surface Brightness	Smell	Total Score
1	4	4	4	4	5	21
2	4	5	3	3	5	20
3	3	4	3	4	4	18
4	4	4	3	4	5	20
5	5	5	4	4	5	23
6	4	4	4	4	5	21
7	4	4	3	3	4	18
8	3	4	2	2	5	16
9	4	3	3	2	4	16
10	3	3	3	3	3	15
11	4	4	3	4	4	19
12	5	5	4	4	5	23
13	3	4	3	4	4	18
14	3	3	4	2	4	16
15	4	4	3	3	4	18
16	3	3	3	2	3	14
17	4	3	4	3	4	18
18	4	4	3	3	4	18
19	4	5	3	2	4	18
20	5	4	4	3	5	21
21	4	3	3	4	5	19
22	3	4	3	2	3	15
23	4	3	3	3	4	17
24	4	4	3	3	4	18
25	3	3	4	3	4	17
	95	96	82	78	106	457

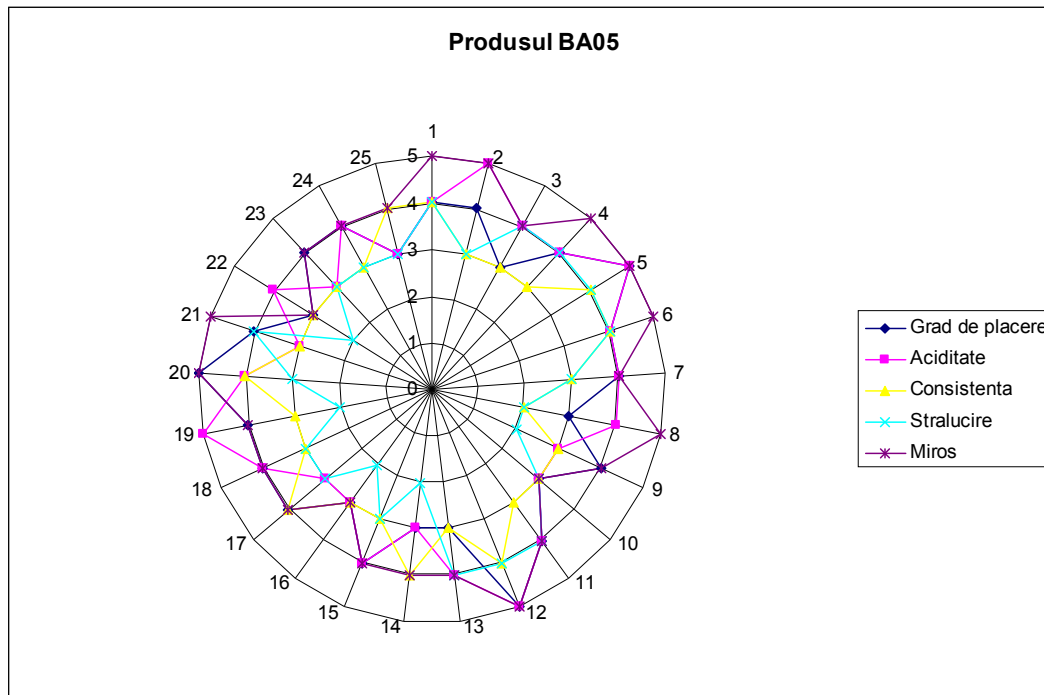


Figure 3 Graphic representation of the score obtained by product BA05 in sensory analysis

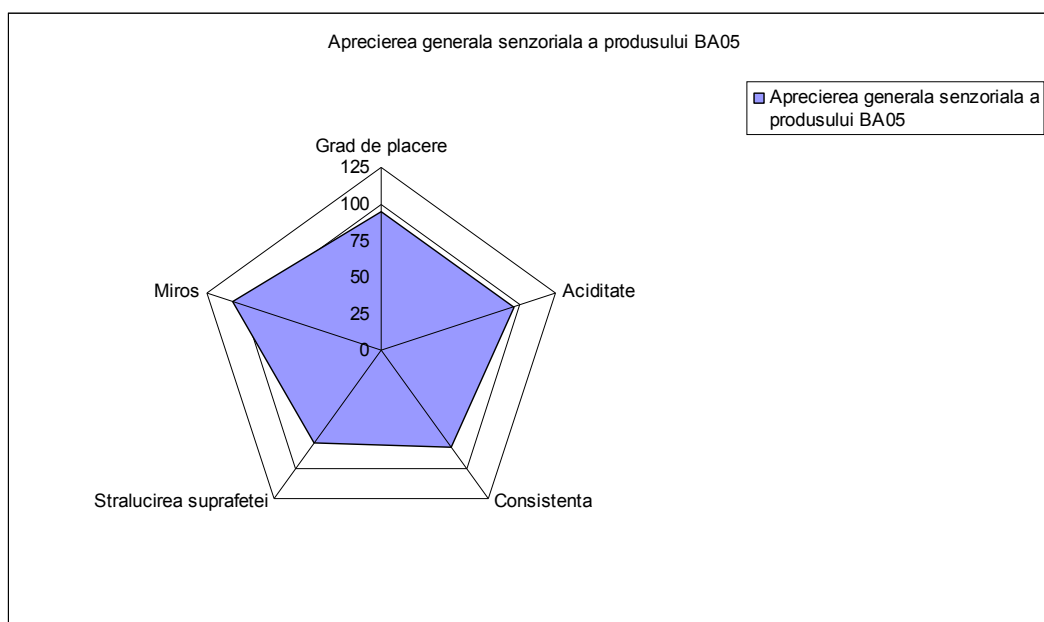


Figure 4 General sensory findings of product BA05

CONCLUSIONS

Unfortunately, we had higher expectations regarding the traditional products analyzed, considering that the test products were supplied by four manufacturers from different regions of the country, two of whom are producers with a long tradition in the field, and two are considered local manufacturers of superior quality products.

The results reveal a known fact, namely that specialists in the field prefer mesophilic products to thermophilic ones, due to the pleasant, characteristic flavor. Note, however, that even a mediocre thermophilic product is less criticized by competent consumers than a mesophilic product, the flavour being more "tasted" than a mere predominantly acid taste.

This test also aimed at pointing out that the taste and aspect of a product matter more than its fat, protein or lactose content. Rather than according to a company's standard or to the desire of the authorities, the consumer appreciates according to what his/her own senses dictate.

ACKNOWLEDGMENTS

This paper was published under the frame of European Social Found, Human Resources Development Operational Programme 2007-2013, project no.POSDRU/159/1.5/S/132765

REFERENCES

- Accolas J.P., Hemme D., Desmazeaud M., Vassal L., Bouillanne C., Veaux M., 1980** - *Les levains lactiques thermophiles: propriétés et comportement en technologie laitière. Une revue.* Lait 60, 487-524
- Arber W., Linn S., 1969** - *DNA modification and restriction.* Annu Rev Biochem 38, 467-500
- Daeschel M. A., 1989** - *Antimicrobial substances from lactic acid bacteria for use as food preservatives,* Food Technology 43 (1989), pp. 164-167.
- Daly C., Fitzgerald F., 1987** - *Mechanisms of bacteriophage insensitivity in the lactic streptococci.* Streptococcal Genetics, pp. 923-927. Edited by J. Ferretti & R. Curtiss. Washington, DC, American Society for Microbiology
- Maas, H., 1998** - *Yoghurt report 98.1 – Make your yoghurt products meet your requirements – DMV International Seminar*
- Madrigal L., Sangronis E., 2007** - *Inulin and derivatives as key ingredients in functional food,* ALAN, vol.57, no.4, p.387-396
- Marshall V.M.E., Tammea A.Y., 1997** - *Physiology and biochemistry of fermented milks.* In: LOW B.A. (ed.): Microbiology and Biochemistry of Cheese and Fermented Milk. Elsevier Applied Science Publishers, London and New York: 153–192.
- *** - www.21stSensory.com
- *** - www.centuryfoods.com
- *** - www.food.oregonstate.edu
- *** - www.milkingredients.ca
- *** - www.rennes.inra.fr
- *** - www.uark.edu